


AWARD/CONTRACT		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)		RATING		PAGE OF PAGES 1 4	
2. CONTRACT (Proc. Inst. Ident.) NO. EP-C-17-031/68HERC19F0059				3. EFFECTIVE DATE See Block 20C		4. REQUISITION/PURCHASE REQUEST/PROJECT NO. See Schedule	
5. ISSUED BY CODE CAD		6. ADMINISTERED BY (If other than Item 5) CODE					
CAD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001							
7. NAME AND ADDRESS OF CONTRACTOR (No., street, country, State and ZIP Code) TETRA TECH, INC. Attn: George Townsend 10306 EATON PL STE 340 FAIRFAX VA 22030				8. DELIVERY <input type="checkbox"/> FOB ORIGIN <input checked="" type="checkbox"/> OTHER (See below)			
				9. DISCOUNT FOR PROMPT PAYMENT			
				10. SUBMIT INVOICES (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN		ITEM	
CODE 198549560		FACILITY CODE					
11. SHIP TO/MARK FOR CODE CAD		12. PAYMENT WILL BE MADE BY CODE RTP FMC					
CAD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001		RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711					
13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: <input type="checkbox"/> 10 U.S.C. 2304 (c) () <input checked="" type="checkbox"/> 41 U.S.C. 3304 (a) ()				14. ACCOUNTING AND APPROPRIATION DATA See Schedule			
15A. ITEM NO	15B. SUPPLIES/SERVICES			15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT
	Continued						
15G. TOTAL AMOUNT OF CONTRACT						\$418,881.36	
16. TABLE OF CONTENTS							
(X)	SEC.	DESCRIPTION	PAGE(S)	(X)	SEC.	DESCRIPTION	PAGE(S)
PART I - THE SCHEDULE				PART II - CONTRACT CLAUSES			
	A	SOLICITATION/CONTRACT FORM			I	CONTRACT CLAUSES	
	B	SUPPLIES OR SERVICES AND PRICES/COSTS		PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.			
	C	DESCRIPTION/SPECS./WORK STATEMENT			J	LIST OF ATTACHMENTS	
	D	PACKAGING AND MARKING		PART IV - REPRESENTATIONS AND INSTRUCTIONS			
	E	INSPECTION AND ACCEPTANCE			K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
	F	DELIVERIES OR PERFORMANCE			L	INSTRS., CONDS., AND NOTICES TO OFFERORS	
	G	CONTRACT ADMINISTRATION DATA			M	EVALUATION FACTORS FOR AWARD	
	H	SPECIAL CONTRACT REQUIREMENTS					
CONTRACTING OFFICER WILL COMPLETE ITEM 17 (SEALED-BID OR NEGOTIATED PROCUREMENT) OR 18 (SEALED-BID PROCUREMENT) AS APPLICABLE							
17. <input checked="" type="checkbox"/> CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return _____ copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)				18. <input type="checkbox"/> SEALED-BID AWARD (Contractor is not required to sign this document.) Your bid on Solicitation Number 68HERC19R0005 , including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your bid, and (b) this award/contract. No further contractual document is necessary. (Block 18 should be checked only when awarding a sealed-bid contract.)			
19A. NAME AND TITLE OF SIGNER (Type or print)				20A. NAME OF CONTRACTING OFFICER Andrea Dehne			
19B. NAME OF CONTRACTOR		19C. DATE SIGNED		20B. UNITED STATES OF AMERICA		20C. DATE SIGNED	
BY (Signature of person authorized to sign)				BY  (Signature of the Contracting Officer)		ELECTRONIC SIGNATURE 12/20/2018	

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED EP-C-17-031/68HERC19F0059	PAGE	OF
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NAME OF OFFEROR OR CONTRACTOR

TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
0001	<p>DUNS Number: 198549560</p> <p>Firm Fixed Price Task Order EP-C-17-031 (Tetra Tech) EnviroAtlas Mapping Application Tools Delivery-Invoice Payment Schedule shall not exceed a frequency greater than once a month and 90% of the task order price. Acceptance for invoicing is based on deliverable approval by the TOCOR. For efficient processing IAW FAR clause 52.232-32, performance based payment invoicing amounts will not be submitted until the TOCOR provides deliverable approval. The TOCOR will notify Tetra Tech within 14 days of submission of a deliverable of EPAs intention to approve or disapprove.</p> <p>TOCOR: Megan Mehaffey Max Expire Date: 12/18/2020 Period of Performance: 12/21/2018 to 12/20/2020</p> <p>Base Period Task Order Issuance Line Item: Technical Support for EPA/ORD/NCEA's Ecological Assessment Programs Requisition No: PR-ORD-18-02146, PR-ORD-19-00317</p> <p>Delivery: 12/20/2019</p> <p>Accounting Info: 18-19-C-26US000-000FK8XPW-2532-26A6A-1826USE064-001 1 BFY: 18 EFY: 19 Fund: C Budget Org: 26US000 Program (PRC): 000FK8XPW Budget (BOC): 2532 Job #: LSMD0000 Cost: 26A6A DCN - Line ID: 1826USE064-001 Funding Flag: Partial Funded: \$90,000.00</p> <p>Accounting Info: 18-19-C-26US000-000FK8XPW-2532-26A6A-1826USE064-002 2 BFY: 18 EFY: 19 Fund: C Budget Org: 26US000 Program (PRC): 000FK8XPW Budget (BOC): 2532 Job #: LSMDSC00 Cost: 26A6A DCN - Line ID: 1826USE064-002 Funding Flag: Partial Funded: \$10,000.00</p> <p>Accounting Info: 19-20-C-26US000-000FK8XPW-2532-26A6A-1926USE010-001 1 BFY: 19 EFY: 20 Fund: C Budget Org: 26US000 Program (PRC): 000FK8XPW Budget (BOC): 2532 Job #: LSMDSC00 Cost: 26A6A DCN - Line ID: 1926USE010-001 Funding Flag: Partial Funded: \$13,500.00</p> <p>Accounting Info: 19-20-C-26US000-000FK8XPW-2532-26A6A-1926USE010-002 2 BFY: 19 EFY: 20 Fund: C Budget Org: 26US000 Continued ...</p>				234,135.12

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED EP-C-17-031/68HERC19F0059	PAGE	OF
		3	4

NAME OF OFFEROR OR CONTRACTOR

TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Program (PRC): 000FK8XPW Budget (BOC): 2532 Job #: LSMD0000 Cost: 26A6A DCN - Line ID: 1926USE010-002 Funding Flag: Partial Funded: \$20,635.12 Accounting Info: 18-19-C-26US000-000FK7XR3-2532-26A6A-1926USE010-00 3 BFY: 18 EFY: 19 Fund: C Budget Org: 26US000 Program (PRC): 000FK7XR3 Budget (BOC): 2532 Job #: LSMD0000 Cost: 26A6A DCN - Line ID: 1926USE010-003 Funding Flag: Partial Funded: \$26,400.25 Accounting Info: 18-19-C-26US000-000FK6XR1-2532-26A6A-1926USE010-00 4 BFY: 18 EFY: 19 Fund: C Budget Org: 26US000 Program (PRC): 000FK6XR1 Budget (BOC): 2532 Job #: LSMD0000 Cost: 26A6A DCN - Line ID: 1926USE010-004 Funding Flag: Partial Funded: \$1,800.03 Accounting Info: 18-19-C-26US000-000FK6XR2-2532-26A6A-1926USE010-00 5 BFY: 18 EFY: 19 Fund: C Budget Org: 26US000 Program (PRC): 000FK6XR2 Budget (BOC): 2532 Job #: LSMD0000 Cost: 26A6A DCN - Line ID: 1926USE010-005 Funding Flag: Partial Funded: \$29,975.25 Accounting Info: 18-19-C-26US000-000FK8XPV-2532-26A6A-1926USE010-00 6 BFY: 18 EFY: 19 Fund: C Budget Org: 26US000 Program (PRC): 000FK8XPV Budget (BOC): 2532 Job #: LSMD0000 Cost: 26A6A DCN - Line ID: 1926USE010-006 Funding Flag: Partial Funded: \$1,528.78 Accounting Info: 18-19-C-26US000-000FK9XR5-2532-26A6A-1926USE010-00 7 BFY: 18 EFY: 19 Fund: C Budget Org: 26US000 Program (PRC): 000FK9XR5 Budget (BOC): 2532 Job #: LSMD0000 Cost: 26A6A DCN - Line ID: 1926USE010-007 Funding Flag: Partial Funded: \$215.76 Accounting Info: 18-19-C-26US000-000FK8XPW-2532-26A6A-1926USE010-00 8 BFY: 18 EFY: 19 Fund: C Budget Org: 26US000 Program (PRC): 000FK8XPW Budget (BOC): 2532 Job #: LSMD0000 Cost: 26A6A DCN - Line ID: Continued ...				

CONTINUATION SHEET

REFERENCE NO. OF DOCUMENT BEING CONTINUED
EP-C-17-031/68HERC19F0059

PAGE 4 OF 4

NAME OF OFFEROR OR CONTRACTOR
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
0001-2	<p>1926USE010-008 Funding Flag: Partial Funded: \$40,079.93</p> <p>Option Period Task Order Issuance Line Item: Technical Support for EPA/ORD/NCEA's Ecological Assessment Programs (Option Line Item) 12/20/2019</p> <p>Delivery: 12/20/2020 TOCOR: Megan Mehaffey/(919)541-4205/mehaffey.megan@epa.gov ALTOCOR: Eric Hall/(919)541-1987/hall.eric@epa.gov</p> <p>The obligated amount of award: \$234,135.12. The total for this award is shown in box 15G.</p>				184,746.24

**PERFORMANCE WORK STATEMENT
EP-C-17-031**

Task Order 68HERC19F0059

Title: EnviroAtlas Mapping Application Tools

EAS Short Title: EnviroAtlas Tools

Task Order COR (TOCOR) Name: Megan Mehaffey Office: ORD/NERL/SED 109 TW Alexander Dr. (MC D243-05) RTP, NC 27711 Phone: 919-541-4205 Email: Mehaffey.Megan@epa.gov	Alternate Task Order COR (ATOCOR) Name: Eric Hall Office: ORD/NERL/SED 109 TW Alexander Dr. (MC D243-05) RTP, NC 27711 Phone: 919-541-1987 Email: Hall.Eric@epa.gov
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Period of Performance

Date of award through 24 months following award

Based period Tasks 1-5 period of performance December 21, 2018 to December 20, 2019

Option period Task 6-7 December 21, 2019 to December 20, 2020

Sustainable and Healthy Communities EnviroAtlas Team

EPA's Office of Research Development and its partners are developing the EnviroAtlas as a project within the Sustainable and Healthy Communities Research Program. The EnviroAtlas is an online decision support tool that allows users to visualize and analyze the geographical distribution of supply, demand, and drivers of change related to natural and built infrastructure at multiple scales for the nation. Explicit relationships between human health and well-being and the services provided by the ecosystem will communicate a full accounting of how decisions affect communities' progress towards sustainability under different scenarios.

Background

EnviroAtlas is an online decision support tool that EPA, other Federal agencies, NGO's, states, and communities can use to help inform policy and planning decisions impacting the places we live, learn, work and play. EnviroAtlas also provides a valuable resource for educators and researchers, combining maps, analysis tools, fact sheets and downloadable data into an easy-to-use, web-based resource. Researching and developing quality visualization and analysis tools and geospatial data to inform decision-making is a high priority for many Program Offices and Regions including data related to administration of the Clean Air Act, the Clean Water Act, Environmental Justice Plan 2020, and many others. EPA's mission includes "ensuring all parts of society -- communities, individuals, businesses, and state, local and tribal governments -- have access to accurate information sufficient to effectively participate in managing human health and environmental risks"

Purpose of this Task Order (TO)

The purpose of this TO is to provide support to EPA for improving tools that help inform decisions by local, state, tribal and federal entities pertaining to air and water, and ecosystem goods and services. Specifically, deliverables from this TO will use data from the EnviroAtlas to develop easy to use tools based on currently available and emerging technology and software for summarization, communication and visualize of ecosystem services.

This TO will continue to support decision makers need to help address issues of greatest concern such as air quality attainment, water quality impairment; drinking water supply and demand, grey and green infrastructure placement to maximize function, contaminant mitigation, as well as, environmental protection and restoration of priority areas. Pursuant to FAR 52.227-17, Rights in Data—Special Works, EPA shall have unlimited rights in all data, as that term is defined in the referenced clause, delivered to EPA under this task order, and in all data first produced in performance of this task order. This includes technical data, computer software, computer software documentation, and computer databases or other databases as those terms are defined in FAR 2.101.

Tasks

Task 1: Communications and Administration - Base phase and continued through Option phases

The contractor shall provide management and administrative support for the project throughout its duration. The contractor shall participate in calls with the U. S. EPA TOCOR to discuss points of contact, roles and responsibilities, Quality Assurance Project Plan (QAPP) protocols, timelines, the schedule of benchmarks, milestones and deliverables, establish dates and times for monthly calls (if necessary) and monthly technical progress reports and general task order administrative and technical information.

Task 2: Quality Assurance Project Plan – Base Phase

All work conducted under this task order shall be performed pursuant to an EPA-approved Quality Assurance Project Plan (QAPP). An EPA approved QAPP was developed under EP-C-12- 060, WA 4-07 (and subsequently incorporated by memo in EP-C-17-031, TO 0005) and significant parts of it apply to the work being done under this TO. A memo shall be submitted to EPA that incorporates the Quality Assurance Project Plan that was used for EP-C-12-060 WA 4-07 into this Task Order. The memo shall link the new tasks to those described in the approved QAPP. The QAPP shall be submitted for review and approval by the TOCOR and the EPA QA Officer 14 days after TO award. The QAPP shall be in conformance with EPA's *Requirements for Quality Assurance Project Plans* (EPA QA/R-5). Portions of this TO relevant to modeling will reference *Guidance for Quality Assurance Project Plans for Modeling* (EPA QA/G-5M) and the SED Software Development QA Guidance Document (SED_Software_Development_QA_Guidance_2a.doc), while portions of this TO relevant to geospatial data will reference *Guidance for Quality Assurance Project Plans for Geospatial Data* (EPA QA/G-5G). Elements from these sources will be used to derive base and option phase QAPPs for this TO. Contractor shall incorporate the entire SED Software Development QA Guidance Document (SED_Software_Development_QA_Guidance_2a.doc), by 3 references, into the QAPP submitted to the EPA TOCOR for this task order. Contractor shall implement the required software quality assurance and quality control (QA/QC) provisions in the SED Software development QA Guidance Document (as incorporated into the QAPP) in all software development and coding activities of this task order during the entire period of performance of this task order (FY2019 and Option Years).

Contractor shall provide a draft QAPP to the TOCOR for review 14 days after TO award as a Microsoft Document or Adobe Portable Document Format.

Contractor shall provide a final QAPP addressing TOCOR's and QA officer's comments on the QAPP due to EPA five business days after receiving comments as a Microsoft Document or Adobe Portable Document Format.

Contractor shall not begin work on Tasks until receiving in writing from the EPA TOCOR that EPA has approved the QAPP.

Task 3: Improving HUC Navigator Tool – Base Phase

The contractor shall modify the existing HUC Navigator tool within the EnviroAtlas mapping application to expand its functionality in the following manner. First, the contractor shall provide as a table the national indicators for all HUC12 watersheds upstream or downstream. Second, contractor shall include in the tool an option to display HUC12s with headwater streams, number of HUCs to outlet, and final outlet location based on the NHDPlus V2. Third, the contractor shall add to the current widget functionality an option to aggregate selected indicator values for all upstream HUC12s based on a user selected location on the mapping application. The contractor shall work with TOCOR to determine which national indicators can be aggregated and the statistical method that best represents the data. The current tool code shall be made available from the EnviroAtlas GitHub.

The contractor shall provide a draft working prototype of the current HUC Navigator Tool Widget with the additional functionality. The contractor shall expand the current help information to guide a user through using the widget with the updated functionality. The draft prototype shall be delivered to the TOCOR for review two (2) months after final approval of the QAPP.

Finalized Web AppBuilder Widget, code, and documentation used to create the tool incorporating TOCOR's comments on the draft prototype shall be delivered on an external drive and uploaded into GitHub for testing on EnviroAtlas. Final tool and code due to EPA two (2) months after approval of the draft prototype.

Task 4: Ecosystem Service Analysis Tool – Base Phase

The contractor shall develop an "ESRI Web AppBuilder Widget" to allow users to answer targeted questions by combining multiple map layers into a series of indices. The code for calculating the indices will be developed in conjunction with the EnviroAtlas team. The widget will include the following types of indices 1) representing current conditions, 2) relative vulnerabilities using a stressor-resource framework, 3) user-creation of customized indices including application of weights using a select set of provided indicators, 4) and reference condition comparisons. EPA will supply a set (up to four (4)) of pre-calculated ecosystem service indices to be incorporated into the Ecosystem Service Analysis tool (e.g., pollination, clean water for drinking, clean air, flood mitigation, etc). These indices will be calculated for all conterminous US 12-digit HUCs. EPA will supply the contractor a file geodatabase, a web service, a .csv or a .dbf file containing the 12-digit HUC id and all relevant values needed for the calculations.

EnviroAtlas envisions a tool that looks and works something like WRI's Aqueduct tool (<http://www.wri.org/our-work/project/aqueduct>) where the user can change the weighting and can visualize the different components of each index.

The contractor shall recommend functionality, design, and best practices to maximize Ecosystem Service Analysis Tool performance based on current EnviroAtlas infrastructure.

Additionally, the contractor can recommend EnviroAtlas infrastructure improvements if it would further improve the Ecosystem Service Analysis Tool performance, but will not be responsible for implementing these recommendations

The contractor shall provide a design framework diagramming the user interface and experience for the Ecosystem Services Analysis Tool. The design framework shall be submitted as power point or another similar format and shall be due to EPA for review by TOCOR four (4) months after final QAPP approval.

The contractor shall provide a draft working prototype five (5) months after TOCOR approval of design framework. The contractor shall include help information to guide a user through using the widget.

Finalized Web AppBuilder Widget, code, and documentation used to create the tool incorporating TOCOR's comments on the prototype shall be delivered on an external drive and uploaded into GitHub for testing on EnviroAtlas. Final tool and code due to EPA by end of contract year September 30, 2019.

Task 5: Image Service / Gridded Map Tools – Base Phase

The contractor shall develop an "ESRI Web AppBuilder Widget" compatible with EnviroAtlas that allows a user to summarize one or more national indicators for a user-defined point or area. The user should be given multiple options for selecting polygon area (e.g., catchment, congressional district, county). The widget shall prompt the user for a buffer size if the user selects a single point. The widget shall notify the user of minimum and maximum area thresholds if the user selects an area that is too large for geoprocessing. This widget shall derive values from gridded datasets hosted via ESRI ArcGIS Image Server. EPA will provide the contractor with Image Server services to develop and test with. The contractor shall work with TOCOR to determine a set of indicators (at least five (5)) that use a simple aggregation (e.g., percent forest) by the user selected spatial unit. The contractor shall work with TOCOR to determine a set of indicators using more complex statistical methods (at least two (2)) (e.g., percent greenspace). The contractor shall work with TOCOR to design the widgets user interface to align with existing tools currently in EnviroAtlas.

The contractor shall recommend functionality, design, and best practices to maximize widget in Task 5 performance based on current EnviroAtlas infrastructure. Additionally, the contractor can recommend EnviroAtlas infrastructure improvements if it would further improve widget performance, but will not be responsible for implementing these recommendations

The contractor shall provide a design framework diagramming the user interface and experience for summarizing the national EnviroAtlas indicators. The design framework shall be submitted as power point or another similar format. The draft design shall be due to EPA for review by TOCOR four (4) months after final QAPP approval.

The contractor shall provide a draft working prototype of the widget five (5) months after approval of the design framework. The prototype shall provide summary statistics for a single Image Service. The contractor shall use an ESRI ArcGIS Image Service of the National Land Cover Dataset (NLCD) and return summary statistics (i.e., percentage of total area of user defined geometry for each land cover class) for the user selected geometry. The contractor shall include help information to guide a user through using the widget.

Finalized prototype Web AppBuilder Widget, code, and documentation used to create the tool incorporating TOCOR's comments on the prototype shall be delivered on an external drive and uploaded into GitHub for testing on EnviroAtlas. Final tool and JavaScript code due to EPA by September 30, 2019

Task 6: Water Quality Portal Tool – Option 1

The contractor shall develop an "ESRI Web AppBuilder Widget" to map water quality results drawn from the Water Quality Portal (WQP) (<https://www.waterqualitydata.us/>) within the EnviroAtlas. The widget would tap into the existing WQP application programming interface (API) for selecting water quality data for a geo-referenced area. Through the WQP API, the user specifies the physical, chemical, and microbial attributes, time period of interest and the sample type (e.g., surface or ground water or fish). Measurements would be returned to the user as point data which would then be added to the EnviroAtlas Interactive Map Active Layers List. The user would have

options of visualizing the data as time-enabled maps (map would show an animated time series) or summarized by mean, median, and maximums for the time period selected. The widget would be developed to work in EnviroAtlas, but it also could be coded to work in other applications including the Water Quality Portal. Contractor shall assume only development for the EnviroAtlas.

The contractor shall recommend functionality, design, and best practices to maximize widget in Task 6 performance based on current EnviroAtlas infrastructure. Additionally, the contractor can recommend EnviroAtlas infrastructure improvements if it would further improve widget performance, but will not be responsible for implementing these recommendations

The contractor shall provide a design framework diagramming the user interface and experience for accessing the WQP and displaying maps in EnviroAtlas. The design framework shall be submitted as power point or another similar format. The draft design shall be due to EPA for review three (3) months after option period has been exercised, but no later than January 30, 2020

The contractor shall provide a draft working prototype after approval of the user interface design. The contractor shall include help information to guide a user through using the widget. The draft prototype shall be due three (6) months after option period has been exercised, but no later than March 31, 2020

Finalized Web AppBuilder Widget, code, and documentation used to create the tool incorporating TOCOR's comments on the prototype shall be delivered on an external drive and uploaded into GitHub for testing on EnviroAtlas. Final tool and JavaScript code due ten (10) months after option period has been exercised, but no later than September 30, 2020.

Task 7: Improving Image Service / Gridded Map Tools – Option 1

The contractor shall modify the existing gridded mapping tool (Task 5 from Base Year) within the EnviroAtlas mapping application to expand its functionality in the following manner. The contractor shall code the widget to provide summary statistics for additional individual ESRI ArcGIS Image Service layers as well as combinations of multiple Image Service layers (e.g., natural land cover in riparian buffers). The contractor shall work the TOCOR to determine the layout or data visualization outputs of the additional statistics and expand the previously developed users guide to include the additional functionality. The contractor shall work with TOCOR to determine a set of indicators (at least two (2)) that combines data from multiple Image Service layers. The draft of the improved gridded map tools is due six (6) months after option period has been exercised, but no later than March 31, 2020.

The final of the improved gridded map tools and edited users guide are due ten (10) months after option period has been exercised, but no later than September 30, 2020

Deliverables and Schedule

Task No.	Deliverable	Schedule
BASE YEAR		
1	Progress Reports Other Communication	Due Monthly Due upon request by the TOCOR
2	Draft QAPP	Due 14 business days after award of Task Order

2	Final QAPP	Due 5 business days of receipt of the written comments on the draft QAPP
3	Improved HUC Navigator Tool - Draft	Due 2 months after final approval of the QAPP
3	Improved HUC Navigator Tool - Final	Due 2 months after TOCOR approval of the draft tool
4	Eco Service Analysis Tool - Framework	Due 4 months after TOCOR approval of the QAPP
4	Eco Service Analysis Tool - Draft	Due 5 months after TOCOR approval of the Framework
4	Eco Service Analysis Tool - Final	Due by September 31, 2019
5	Gridded Map Tool- Framework	Due 4 months after TOCOR approval of the QAPP
5	Gridded Map Tool- Draft	Due 5 months after TOCOR approval of the Framework
5	Gridded Map Tool- Final	Due by September 31, 2019
OPTION 1		
6	Water Quality Portal Tool – Framework	Due 3 months after option period has been exercised, but no later than January 30, 2020
6	Water Quality Portal Tool – Draft	Due 6 months after option period has been exercised, but no later than March 31, 2020
6	Water Quality Portal Tool – Final	Due 10 months after option period has been exercised, but no later than September 30, 2020
7	Improved Gridded Map Tool - Draft	Due 6 months after option period has been exercised, but no later than March 31, 2020
7	Improved Gridded Map Tool - Final	Due 10 months after option period has been exercised, but no later than September 30, 2020

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE OF PAGES	
				1 2	
2. AMENDMENT/MODIFICATION NO. P00001		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO. PR-ORD-19-01791	
6. ISSUED BY CAD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001		7. ADMINISTERED BY (If other than Item 6) CODE		5. PROJECT NO. (If applicable)	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) TETRA TECH, INC. Attn: John Hochheimer 10306 EATON PL STE 340 FAIRFAX VA 22030		(x)		9A. AMENDMENT OF SOLICITATION NO.	
CODE 198549560		FACILITY CODE		9B. DATED (SEE ITEM 11)	
		x		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-C-17-031 68HERC19F0059	
				10B. DATED (SEE ITEM 13) 12/20/2018	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Increase: \$184,746.24
See Schedule

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) BILATERAL - OPTION EXERCISE WITH FUNDING AND PWS AMEND

E. IMPORTANT: Contractor ☐ is not ☒ is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: 198549560

TOCOR: Megan Mehaffey Max Expire Date: 12/20/2020

LIST OF CHANGES:

Reason for Modification: BILATERAL - OPTION EXERCISE WITH FULL FUNDING AND PWS AMEND (SEE ATTACHED)

Total Amount for this Modification: \$0.00

New Total Amount for this Version: \$184,746.24

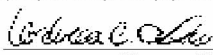
New Total Amount for this Award: \$418,881.36

Obligated Amount for this Modification: \$184,746.24

New Total Obligated Amount for this Award: \$418,881.36

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Andrea Dehne	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA  (Signature of Contracting Officer)	16C. DATE SIGNED 10/07/2019

Previous edition unusable

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-C-17-031/68HERC19F0059/P00001	2	2

NAME OF OFFEROR OR CONTRACTOR
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>CHANGES FOR LINE ITEM NUMBER: 1-2 Obligated Amount for this Modification: \$184,746.24 Start Date Added : 12/21/2019 End Date Added : 12/20/2020 Exercised option</p> <p>NEW ACCOUNTING CODE ADDED: Account code: 19-20-C-26US000-000FK8XPW-2532-26A6A-1926USE096-001 Beginning FiscalYear 19 Ending Fiscal Year 20 Fund (Appropriation) C Budget Organization 26US000 Program (PRC) 000FK8XPW Budget (BOC) 2532 Job # (Site/Project) Cost Organization 26A6A DCN-LineID 1926USE096-001 Amount: \$184,746.24 Subject To Funding: N</p> <p>Payment: Period of Performance: 12/21/2018 to 12/20/2020 Delivery-Invoice Payment Schedule shall not exceed a frequency greater than once a month and 90% of the task order price. Acceptance for invoicing is based on deliverable approval by the TOCOR. For efficient processing IAW FAR clause 52.232-32, performance based payment invoicing amounts will not be submitted until the TOCOR provides deliverable approval. The TOCOR will notify Tetra Tech within 14 days of submission of a deliverable of EPAs intention to approve or disapprove.</p> <p>TOCOR: Megan Mehaffey/(919)541-4205/mehaffey.megan@epa.gov ALTOCOR: Eric Hall/(919)541-1987/hall.eric@epa.gov</p>				

PERFORMANCE WORK STATEMENT

EP-C-17-031

PR-ORD-19-01791

Task Order 19F0059

Amendment #1

Amended 9/30/2019

Title: EnviroAtlas Mapping Application Tools

This amendment is to revise the final deliverable dates for Tasks 4 and 5 associated with the base period. While the changed deliverable date of February 2020 shifts these two tasks slightly into the option period all work will be completed within the overall 24-month PoP.

EAS Short Title: EnviroAtlas Tools

Task Order COR (TOCOR) Name: Megan Mehaffey Office: ORD/NERL/SED 109 TW Alexander Dr. (MC D243-05) RTP, NC 27711 Phone: 919-541-4205 Email: Mehaffey.Megan@epa.gov	Alternate Task Order COR (ATOCOR) Name: Eric Hall Office: ORD/NERL/SED 109 TW Alexander Dr. (MC D243-05) RTP, NC 27711 Phone: 919-541-1987 Email: Hall.Eric@epa.gov
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Period of Performance

Date of award through 24 months following award

Based period Tasks 1-5 period of performance October 1, 2018 to September 30, 2019

Option period Task 6-7 October 1, 2019 to September 30, 2020

Sustainable and Healthy Communities EnviroAtlas Team

EPA's Office of Research Development and its partners are developing the EnviroAtlas as a project within the Sustainable and Healthy Communities Research Program. The EnviroAtlas is an online decision support tool that allows users to visualize and analyze the geographical distribution of supply, demand, and drivers of change related to natural and built infrastructure at multiple scales for the nation. Explicit relationships between human health and well-being and the services provided by the ecosystem will communicate a full accounting of how decisions affect communities' progress towards sustainability under different scenarios.

Background

EnviroAtlas is an online decision support tool that EPA, other Federal agencies, NGO's, states, and communities can use to help inform policy and planning decisions impacting the places we live, learn, work and play. EnviroAtlas also provides a valuable resource for educators and researchers, combining maps, analysis tools, fact sheets and downloadable data into an easy-to-use, web-based resource. Researching and developing quality visualization and analysis tools and geospatial data to inform decision-making is a high priority for many Program Offices and Regions including data related to administration of the Clean Air Act, the Clean Water Act, Environmental Justice Plan 2020, and many others. EPA's mission includes "ensuring all parts of society -- communities, individuals, businesses, and state, local and tribal governments -- have access to accurate information sufficient to effectively participate in managing human health and environmental risks"

Purpose of this Task Order (TO)

The purpose of this TO is to provide support to EPA for improving tools that help inform decisions by local, state, tribal and federal entities pertaining to air and water, and ecosystem goods and services. Specifically, deliverables from this TO will use data from the EnviroAtlas to develop easy to use tools based on currently available and emerging technology and software for summarization, communication and visualize of ecosystem services.

This TO will continue to support decision makers need to help address issues of greatest concern such as air quality attainment, water quality impairment; drinking water supply and demand, grey and green infrastructure placement to maximize function, contaminant mitigation, as well as, environmental protection and restoration of priority areas. Pursuant to FAR 52.227-17, Rights in Data—Special Works, EPA shall have unlimited rights in all data, as that term is defined in the referenced clause, delivered to EPA under this task order, and in all data first produced in performance of this task order. This includes technical data, computer software, computer software documentation, and computer databases or other databases as those terms are defined in FAR 2.101.

Tasks

Task 1: Communications and Administration - Base phase and continued through Option phases

The contractor shall provide management and administrative support for the project throughout its duration. The contractor shall participate in calls with the U. S. EPA TOCOR to discuss points of contact, roles and responsibilities, Quality Assurance Project Plan (QAPP) protocols, timelines, the schedule of benchmarks, milestones and deliverables, establish dates and times for monthly calls (if necessary) and monthly technical progress reports and general task order administrative and technical information.

Task 2: Quality Assurance Project Plan – Base Phase

All work conducted under this task order shall be performed pursuant to an EPA-approved Quality Assurance Project Plan (QAPP). The QAPP shall be submitted for review and approval by the TOCOR and the EPA QA Officer 14 days after TO award. The QAPP shall be in conformance with EPA's *Requirements for Quality Assurance Project Plans* (EPA QA/R-5). Portions of this TO relevant to modeling will reference *Guidance for Quality Assurance Project Plans for Modeling* (EPA QA/G-5M), while portions of this TO relevant to geospatial data will reference *Guidance for Quality Assurance Project Plans for Geospatial Data* (EPA QA/G-5G). Elements from these sources will be used to derive base and option phase QAPPs for this TO.

Draft QAPP submitted to the TOCOR for review 14 days after TO award as a Microsoft Document or Adobe Portable Document Format.

Final QAPP addressing TOCOR's and QA officer's comments on the QAPP due to EPA five business days after receiving comments as a Microsoft Document or Adobe Portable Document Format.

Contractor shall not begin work on Tasks until receiving in writing from the EPA TOCOR that EPA has approved the QAPP.

Task 3: Improving HUC Navigator Tool – Base Phase

The contractor shall modify the existing HUC Navigator tool within the EnviroAtlas mapping application to expand its functionality in the following manner. First, the contractor shall provide as a table the national indicators for all HUC12 watersheds upstream or downstream. Second, contractor shall include in the tool an option to display HUC12s with headwater streams, number of HUCs to outlet, and final outlet location based on the NHDPlus V2. Third, the contractor shall add to the current widget functionality an option to aggregate selected indicator values for all upstream HUC12s based on a user selected location on the mapping application. The contractor shall work with TOCOR to determine which national indicators can be aggregated and the statistical method that best represents the data. The current tool code shall be made available from the EnviroAtlas GitHub.

The contractor shall provide a draft working prototype of the current HUC Navigator Tool Widget with the additional functionality. The contractor shall expand the current help information to guide a user through using the widget with the updated functionality. The draft prototype shall be delivered to the TOCOR for review two (2) months after final approval of the QAPP.

Finalized Web AppBuilder Widget, code, and documentation used to create the tool incorporating TOCOR's comments on the draft prototype shall be delivered on an external drive and uploaded into GitHub for testing on EnviroAtlas. Final tool and code due to EPA two (2) months after approval of the draft prototype.

Task 4: Ecosystem Service Analysis Tool – Base Phase

The contractor shall develop an "ESRI Web AppBuilder Widget" to allow users to answer targeted questions by combining multiple map layers into a series of indices. The code for calculating the indices will be developed in conjunction with the EnviroAtlas team. The widget will include the following types of indices 1) representing current conditions, 2) relative vulnerabilities using a stressor-resource framework, 3) user-creation of customized indices including application of weights using a select set of provided indicators, 4) and reference condition comparisons. EPA will supply a set of pre-calculated ecosystem service indices to be incorporated into the Ecosystem Service Analysis tool (e.g., pollination, clean water for drinking, clean air, flood mitigation, etc). These indices will be calculated for all conterminous US 12-digit HUCs. EPA will supply the contractor a file geodatabase, a web service, a .csv or a .dbf file containing the 12-digit HUC id and all relevant values needed for the calculations.

EnviroAtlas envisions a tool that looks and works something like WRI's Aqueduct tool (<http://www.wri.org/our-work/project/aqueduct>) where the user can change the weighting and can visualize the different components of each index.

The contractor shall recommend functionality, design, and best practices to maximize Ecosystem Service Analysis Tool performance based on current EnviroAtlas infrastructure. Additionally, the contractor can recommend EnviroAtlas infrastructure improvements if it would further improve the Ecosystem Service Analysis Tool performance. The contractor shall provide a design framework diagramming the user interface and experience for the Ecosystem Services Analysis Tool. The design framework shall be submitted as power point or another similar format and shall be due to EPA for review by TOCOR four (4) months after final QAPP approval.

The contractor shall provide a draft working prototype five (5) months after TOCOR approval of design framework. The contractor shall include help information to guide a user through using the widget.

Finalized Web AppBuilder Widget, code, and documentation used to create the tool incorporating TOCOR's comments on the prototype shall be delivered on an external drive and uploaded into GitHub for testing on EnviroAtlas. Final tool and code due to EPA by end of contract year September 30, 2019.

Task 5: Image Service / Gridded Map Tools – Base Phase

The contractor shall develop an “ESRI Web AppBuilder Widget” compatible with EnviroAtlas that allows a user to summarize one or more national indicators for a user-defined point or area. The user should be given multiple options for selecting polygon area (e.g., catchment, congressional district, county). The widget shall prompt the user for a buffer size if the user selects a single point. The widget shall notify the user of minimum and maximum area thresholds if the user selects an area that is too large for geoprocessing. This widget shall derive values from gridded datasets hosted via ESRI ArcGIS Image Server. EPA will provide the contractor with Image Server services to develop and test with. The contractor shall work with TOCOR to determine which national indicators can be aggregated and the statistical method that would best represent the data. The contractor shall work with TOCOR to design the widgets user interface to align with existing tools currently in EnviroAtlas.

The contractor shall recommend functionality, design, and best practices to maximize widget in Task 5 performance based on current EnviroAtlas infrastructure. Additionally, the contractor can recommend EnviroAtlas infrastructure improvements if it would further improve widget performance. The contractor shall provide a design framework diagramming the user interface and experience for summarizing the national EnviroAtlas indicators. The design framework shall be submitted as power point or another similar format. The draft design shall be due to EPA for review by TOCOR four (4) months after final QAPP approval.

The contractor shall provide a draft working prototype of the widget five (5) months after approval of the design framework. The prototype shall provide summary statistics for a single Image Service. The contractor shall use an ESRI ArcGIS Image Service of the National Land Cover Dataset (NLCD) and return summary statistics (i.e., percentage of total area of user defined geometry for each land cover class) for the user selected geometry. The contractor shall include help information to guide a user through using the widget.

Finalized prototype Web AppBuilder Widget, code, and documentation used to create the tool incorporating TOCOR’s comments on the prototype shall be delivered on an external drive and uploaded into GitHub for testing on EnviroAtlas. Final tool and JavaScript code due to EPA by September 30, 2019

Task 6: Water Quality Portal Tool – Option 1

The contractor shall develop an “ESRI Web AppBuilder Widget” to map water quality results drawn from the Water Quality Portal (WQP) (<https://www.waterqualitydata.us/>) within the EnviroAtlas. The widget would tap into the existing WQP application programming interface (API) for selecting water quality data for a geo-referenced area. Through the WQP API, the user specifies the physical, chemical, and microbial attributes, time period of interest and the sample type (e.g., surface or ground water or fish). Measurements would be returned to the user as point data which would then be added to the EnviroAtlas Interactive Map Active Layers List. The user would have options of visualizing the data as time-enabled maps (map would show an animated time series) or summarized by mean, median, and maximums for the time period selected. The widget would be developed to work in EnviroAtlas, but it also could be coded to work in other applications including the Water Quality Portal.

The contractor shall recommend functionality, design, and best practices to maximize widget in Task 6 performance based on current EnviroAtlas infrastructure. Additionally, the contractor can recommend EnviroAtlas infrastructure improvements if it would further improve widget performance. The contractor shall provide a design framework diagramming the user interface and experience for accessing the WQP and displaying maps in EnviroAtlas. The design framework shall be submitted as power point or another similar format. The draft design shall be due to EPA for review three (3) months after option period has been exercised, but no later than January 30, 2020

The contractor shall provide a draft working prototype after approval of the user interface design. The contractor shall include help information to guide a user through using the widget. The draft prototype shall be due three (6) months after option period has been exercised, but no later than March 31, 2020

Finalized Web AppBuilder Widget, code, and documentation used to create the tool incorporating TOCOR's comments on the prototype shall be delivered on an external drive and uploaded into GitHub for testing on EnviroAtlas. Final tool and JavaScript code due ten (10) months after option period has been exercised, but no later than September 30, 2020.

Task 7: Improving Image Service / Gridded Map Tools – Option 1

The contractor shall modify the existing gridded mapping tool (Task 5 from Base Year) within the EnviroAtlas mapping application to expand its functionality in the following manner. The contractor shall code the widget to provide summary statistics for additional individual ESRI ArcGIS Image Service layers as well as combinations of multiple Image Service layers (e.g., natural land cover in riparian buffers). The contractor shall work the TOCOR to determine the layout or data visualization outputs of the additional statistics and expand the previously developed users guide to include the additional functionality.

The draft of the improved gridded map tools are due six (6) months after option period has been exercised, but no later than March 31, 2020.

The final of the improved gridded map tools and edited users guide are due ten (10) months after option period has been exercised, but no later than September 30, 2020

Deliverables and Schedule

Task No.	Deliverable	Schedule
BASE YEAR		
1	Progress Reports Other Communication	Due Monthly Due upon request by the TOCOR
2	Draft QAPP	Due 14 business days after award of Task Order
2	Final QAPP	Due 5 business days of receipt of the written comments on the draft QAPP
3	Improved HUC Navigator Tool - Draft	Due 2 months after final approval of the QAPP
3	Improved HUC Navigator Tool - Final	Due 2 months after TOCOR approval of the draft tool
4	Eco Service Analysis Tool - Framework	Due 4 months after TOCOR approval of the QAPP
4	Eco Service Analysis Tool - Draft	Due 5 months after TOCOR approval of the Framework
4	Eco Service Analysis Tool - Final	Due by February 2020

5	Gridded Map Tool- Framework	Due 4 months after TOCOR approval of the QAPP
5	Gridded Map Tool- Draft	Due 5 months after TOCOR approval of the Framework
5	Gridded Map Tool- Final	Due by February 2020
OPTION 1		
6	Water Quality Portal Tool – Framework	Due 3 months after option period has been exercised, but no later than January 30, 2020
6	Water Quality Portal Tool – Draft	Due 6 months after option period has been exercised, but no later than March 31, 2020
6	Water Quality Portal Tool – Final	Due 10 months after option period has been exercised, but no later than September 30, 2020
7	Improved Gridded Map Tool - Draft	Due 6 months after option period has been exercised, but no later than March 31, 2020
7	Improved Gridded Map Tool - Final	Due 10 months after option period has been exercised, but no later than September 30, 2020

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE		PAGE OF PAGES 1 2		
2. AMENDMENT/MODIFICATION NO. P00002		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
6. ISSUED BY CAD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001		CODE CAD		7. ADMINISTERED BY (If other than Item 6)		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) TETRA TECH, INC. Attn: John Hochheimer 10306 EATON PL STE 340 FAIRFAX VA 22030				(X)		9A. AMENDMENT OF SOLICITATION NO.	
						9B. DATED (SEE ITEM 11)	
				X		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-C-17-031 68HERC19F0059	
						10B. DATED (SEE ITEM 13) 12/20/2018	
CODE 198549560		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required) See Schedule							
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
CHECK ONE		A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.					
X		B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).					
		C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:					
		D. OTHER (Specify type of modification and authority)					
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) DUNS Number: 198549560 TOCOR: Megan Mehaffey Max Expire Date: 12/20/2020 The purpose of this modification is to incorporate the attached EPA blanket administrative modification signed by Raoul Scott on July 30, 2020. All other terms and conditions remain unchanged. Payment: Period of Performance: 12/21/2018 to 12/20/2020 Delivery-Invoice Payment Schedule shall not exceed a frequency greater than once a month and 90% of the task order price. Acceptance for invoicing is based on deliverable approval by the TOCOR. For efficient processing IAW FAR clause 52.232-32, performance based payment invoicing amounts will not be submitted until the TOCOR provides deliverable approval. The Continued ... Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Andrea Dehne			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA  (Signature of Contracting Officer)		16C. DATE SIGNED 10/02/2020	
(Signature of person authorized to sign)							

NAME OF OFFEROR OR CONTRACTOR
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	TOCOR will notify Tetra Tech within 14 days of submission of a deliverable of EPAs intention to approve or disapprove. TOCOR: Megan Mehaffey/(919)541-4205/mehaffey.megan@epa.gov ALTOCOR: Eric Hall/(919)541-1987/hall.eric@epa.gov				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES	
2. AMENDMENT/MODIFICATION NUMBER		3. EFFECTIVE DATE 08/13/2020		4. REQUISITION/PURCHASE REQUISITION NUMBER		5. PROJECT NUMBER (If applicable)	
6. ISSUED BY Raoul D. Scott, Director OMS/ARM/OAS/Policy, Training and Oversight Division US Environmental Protection Agency, Mail Code 3802R 1200 Pennsylvania Avenue, NW Washington, DC 20004		7. ADMINISTERED BY (If other than Item 6)		CODE			
8. NAME AND ADDRESS OF CONTRACTOR (Number, street, county, State and ZIP Code) To All EPA Contractors				<input checked="" type="checkbox"/> (X)		9A. AMENDMENT OF SOLICITATION NUMBER	
				<input type="checkbox"/>		9B. DATED (SEE ITEM 11)	
				<input checked="" type="checkbox"/> (X)		10A. MODIFICATION OF CONTRACT/ORDER NUMBER To all EPA Contracts and Orders	
				<input type="checkbox"/>		10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE					

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:
 (a) By completing items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted;
 or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

**13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS.
IT MODIFIES THE CONTRACT/ORDER NUMBER AS DESCRIBED IN ITEM 14.**

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NUMBER IN ITEM 10A.
<input type="checkbox"/>	
<input checked="" type="checkbox"/> (X)	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
<input type="checkbox"/>	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
<input type="checkbox"/>	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☒ is not ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

This contract/order is being modified in accordance with the applicability instructions in interim FAR Case 2019-009, and FAR 4.2105, requiring contracting officers to include FAR clause 52.204-25, Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment.

See attached for the full text version of FAR 52.204-25. Contractor Acknowledgment of receipt required.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Raoul D. Scott, Director Policy, Training and Oversight Division	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA RAOUL SCOTT Digitally signed by RAOUL SCOTT Date: 2020.07.30 11:40:17 -04'00'	16C. DATE SIGNED
(Signature of person authorized to sign)		(Signature of Contracting Officer)	

Previous edition unusable

STANDARD FORM 30 (REV. 11/2016)
Prescribed by GSA FAR (48 CFR) 53.243

52.204-25 Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment.

As prescribed in 4.2105(b) and in the applicability instructions in interim FAR Case 2019-009, insert the following clause:

Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment (Aug 2020)

(a) Definitions. As used in this clause—

Backhaul means intermediate links between the core network, or backbone network, and the small subnetworks at the edge of the network (e.g., connecting cell phones/towers to the core telephone network). Backhaul can be wireless (e.g., microwave) or wired (e.g., fiber optic, coaxial cable, Ethernet).

Covered foreign country means The People's Republic of China.

Covered telecommunications equipment or services means—

(1) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities);

(2) For the purpose of public safety, security of Government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities);

(3) Telecommunications or video surveillance services provided by such entities or using such equipment; or

(4) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

Critical technology means—

(1) Defense articles or defense services included on the United States Munitions List set forth in the International Traffic in Arms Regulations under subchapter M of chapter I of title 22, Code of Federal Regulations;

(2) Items included on the Commerce Control List set forth in Supplement No. 1 to part 774 of the Export Administration Regulations under subchapter C of chapter VII of title 15, Code of Federal Regulations, and controlled-

(i) Pursuant to multilateral regimes, including for reasons relating to national security, chemical and biological weapons proliferation, nuclear nonproliferation, or missile technology; or

(ii) For reasons relating to regional stability or surreptitious listening;

(3) Specially designed and prepared nuclear equipment, parts and components, materials, software, and technology covered by part 810 of title 10, Code of Federal Regulations (relating to assistance to foreign atomic energy activities);

(4) Nuclear facilities, equipment, and material covered by part 110 of title 10, Code of Federal Regulations (relating to export and import of nuclear equipment and material);

(5) Select agents and toxins covered by part 331 of title 7, Code of Federal Regulations, part 121 of title 9 of such Code, or part 73 of title 42 of such Code; or

(6) Emerging and foundational technologies controlled pursuant to section 1758 of the Export Control Reform Act of 2018 (50 U.S.C. 4817).

Interconnection arrangements means arrangements governing the physical connection of two or more networks to allow the use of another's network to hand off traffic where it is ultimately delivered (e.g., connection of a customer of telephone provider A to a customer of telephone company B) or sharing data and other information resources.

Reasonable inquiry means an inquiry designed to uncover any information in the entity's possession about the identity of the producer or provider of covered telecommunications equipment or services used by the entity that excludes the need to include an internal or third-party audit.

Roaming means cellular communications services (e.g., voice, video, data) received from a visited network when unable to connect to the facilities of the home network either because signal coverage is too weak or because traffic is too high.

Substantial or essential component means any component necessary for the proper function or performance of a piece of equipment, system, or service.

(b) Prohibition. (1) Section 889(a)(1)(A) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2019, from procuring or obtaining, or extending or renewing a contract to procure or obtain, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. The Contractor is prohibited from providing to the Government any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system, unless an exception at paragraph (c) of this clause applies or the covered telecommunication equipment or services are covered by a waiver described in FAR 4.2104.

(2) Section 889(a)(1)(B) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2020, from entering into a contract, or extending or renewing a contract, with an entity that uses any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system, unless an exception at paragraph (c) of this clause applies or the covered telecommunication equipment or services are covered by a waiver described in FAR 4.2104. This prohibition applies to the use of covered telecommunications equipment or services, regardless of whether that use is in performance of work under a Federal contract.

(c) *Exceptions.* This clause does not prohibit contractors from providing—

(1) A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(2) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(d) Reporting requirement.

(1) In the event the Contractor identifies covered telecommunications equipment or services used as a substantial or essential component of any system, or as critical technology as part of any system, during contract performance, or the Contractor is notified of such by a subcontractor at any tier or by any other source, the Contractor shall report the information in paragraph (d)(2) of this clause to the Contracting Officer, unless elsewhere in this contract are established procedures for reporting the information; in the case of the Department of Defense, the Contractor shall report to the website at <https://dibnet.dod.mil>. For indefinite delivery contracts, the Contractor shall report to the Contracting Officer for the indefinite delivery contract and the Contracting Officer(s) for any affected order or, in the case of the Department of Defense, identify both the indefinite delivery contract and any affected orders in the report provided at <https://dibnet.dod.mil>.

(2) The Contractor shall report the following information pursuant to paragraph (d)(1) of this clause

(i) Within one business day from the date of such identification or notification: the contract number; the order number(s), if applicable; supplier name; supplier unique entity identifier (if known); supplier Commercial and Government Entity (CAGE) code (if known); brand; model number (original equipment manufacturer number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.

(ii) Within 10 business days of submitting the information in paragraph (d)(2)(i) of this clause: any further available information about mitigation actions undertaken or recommended. In addition, the Contractor shall describe the efforts it undertook to prevent use or submission of covered telecommunications equipment or services, and any additional efforts that will be incorporated to prevent future use or submission of covered telecommunications equipment or services.

(e) *Subcontracts*. The Contractor shall insert the substance of this clause, including this paragraph (e) and excluding paragraph (b)(2), in all subcontracts and other contractual instruments, including subcontracts for the acquisition of commercial items.

(End of clause)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES	
						1 2	
2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
P00003		See Block 16C		PR-ORD-21-00333			
6. ISSUED BY		CODE		7. ADMINISTERED BY (If other than Item 6)		CODE	
CAD							
CAD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: W136 Cincinnati OH 45268-0001							
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)				(x)			
TETRA TECH, INC. Attn: John Hochheimer 10306 EATON PL STE 340 FAIRFAX VA 22030							
				9A. AMENDMENT OF SOLICITATION NO.			
				9B. DATED (SEE ITEM 11)			
				x 10A. MODIFICATION OF CONTRACT/ORDER NO.			
				EP-C-17-031			
				68HERC19F0059			
				10B. DATED (SEE ITEM 13)			
				12/20/2018			
CODE 198549560		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
See Schedule							
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.						
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).						
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:						
	D. OTHER (Specify type of modification and authority)						
X	BILATERAL AGREEMENT - NO COST/PRICE POP EXTENSION AND COR CHANGE						
E. IMPORTANT: Contractor <input type="checkbox"/> is not <input checked="" type="checkbox"/> is required to sign this document and return <u>1</u> copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
DUNS Number: 198549560							
TOCOR: Jeremy Baynes Max Expire Date: 02/20/2021							
LIST OF CHANGES:							
Reason for Modification: Other Administrative Action - No Cost/Price PoP Extension due to EPA delay in providing comments to the contractor on the draft tools in TO-6 and TO-7. This delay reduced the time that the contractor would have had to address those comments and deliver the final product.							
Period of Performance End Date changed from 20-DEC-20 to 20-FEB-21							
Total Amount for this Modification: \$0.00							
New Total Amount for this Version: \$184,746.24							
New Total Amount for this Award: \$418,881.36							
Continued ...							
Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				Andrea Dehne			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
				 (Signature of Contracting Officer)		ELECTRONIC SIGNATURE 12/15/2020	
(Signature of person authorized to sign)							

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-C-17-031/68HERC19F0059/P00003	2	2

NAME OF OFFEROR OR CONTRACTOR
TETRA TECH, INC.

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>TOCOR (Task Order Contracting Officer's Representative) changed to : Jeremy Baynes Maximum Potential Expiration Date changed to : 02/20/2021 CHANGES FOR LINE ITEM NUMBER: 1-2 End Date changed from 20-DEC-20 to 20-FEB-21</p> <p>CHANGES FOR DELIVERY LOCATION: CAD Delivery Date changed from 12/20/2020 to 02/20/2021</p> <p>Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center (AA216-01) 109 TW Alexander Drive www2.epa.gov/financial/contracts Durham NC 27711</p> <p>Period of Performance: 12/21/2018 to 02/20/2021 Delivery-Invoice Payment Schedule shall not exceed a frequency greater than once a month and 90% of the task order price. Acceptance for invoicing is based on deliverable approval by the TOCOR. For efficient processing IAW FAR clause 52.232-32, performance based payment invoicing amounts will not be submitted until the TOCOR provides deliverable approval. The TOCOR will notify Tetra Tech within 14 days of submission of a deliverable of EPAs intention to approve or disapprove.</p> <p>TOCOR: Jeremy Baynes/(919)541-1939/baynes.jeremy@epa.gov ALTOCOR: Eric Hall/(919)541-1987/hall.eric@epa.gov</p>				